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ABSTRACT

A study was undertaken to examine the feasibility of a modified cloze format in the assessment of contextual and structural analysis skills and to examine certain factors of language processing among adult, nonproficient readers. The subjects, 69 adults enrolled in remedial reading courses at two technical colleges, were administered either the Adult Basic Learning Exam (ABLE), Level III, or the Nelson-Denny Reading Test, Form C. They were then rank-ordered by reading percentile ranks, and successive matches of four were randomly assigned to four treatment conditions. Depending upon the treatment condition, the subjects were either given skills training or no skills training, and were administered either the cued or uncued versions of the Contextual and Word Identification Measure (CWIM). The results showed that the modified cloze format used in the CWIM was feasible for assessment of certain reading subskills; however, the value of subskill training was not established. Intraword cue information was found to be a significant factor affecting replacement scores, as was the location of the intraword cue--with information in the initial position resulting in significantly higher replacement scores than information in the terminal portion of words. Form class identity of deletions was preserved in responses by a majority of subjects in all treatment conditions across the four grammatical categories assessed in the study. (Author/FL)

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Technical Report No. 504

INVESTIGATION OF THE CONTEXTUAL AND WORD IDENTIFICATION STRATEGIES OF ADULT NON-PROFICIENT READERS

by

Judyanne Schwenker

Report from the Project on
Studies in Language: Reading and Communication

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Madison, Wisconsin

July 1979

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- providing assistance to educators which helps transfer the outcomes of research and development to improved practice in local schools and teacher education institutions

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Table of Contents

Acknowledgements ii

List of Tables iv

Abstract vi

Chapter

I. Statement of the Problem 1

II. Method 18

III. Results and Discussion 37

IV. Summary, Conclusions and Implications 55

Appendices

A. Packet of Training Materials Used for Treatment Groups 1 and 3 64

B. Letters to Study Participants 70

C. Directions and Sample of ABLE, Level III, Form C, Reading Subtest 73

D. Nonsense Word Rating Sheets 75

E. List of Nonsense Words Used in the Study. 80

F. CWIM, Version B 85

G. CWIM, Version A 91

References 99

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List of Tables

Table		Page
1	Subjects by Cohort and Treatment Group	19
2	ABLE III Reliability Coefficients Obtained for School and Adult Groups	27
3	Standard Errors of Measurement for ABLE III, Form A Subtests for the Various Test Groups.	28
4	Nelson-Denny Split Half Reliability Coefficients	30
5	Summary of CWIM Ranges, Means, Standard Deviations, Standard Errors of Means and Confidence Intervals of Percentage Correct Scores	39
6	CWIM Hoyt Reliability Estimates by Version	40
7	One Way Analysis of Variance to Examine Training Effects	42
8	One Way Analysis of Variance to Examine Cueing Effects	44
9	Summary of Even-Odd% Ranges, Means, Standard Deviations, Standard Errors of Means and Confidence Intervals of Percentage Correct Scores and One Way Analysis of Variance to Examine Cue Location Effects	45
10	Summary of Even-Odd% Ranges, Means, Standard Deviations, Standard Errors of Means and Confidence Intervals of Percentage Correct Scores with Sex as a Group Variable and One Way Analysis of Variance with Dependent Variable: Cue Location, Group Variable: Sex.	47

Abstract

The purposes of this study were to examine the feasibility of a modified cloze format in the assessment of contextual and structural analysis skills, and to examine certain factors of language processing among a population of adult, nonproficient readers. Subjects in the study were 69 adults enrolled in remedial reading courses at two technical colleges in Wisconsin. All subjects were administered either the Adult Basic Learning Exam (ABLE), Level III, or the Nelson-Denny Reading Test, Form C. Subjects were rank-ordered by reading percentile ranks, then successive matches of four were randomly assigned to four treatment conditions. Depending on the treatment condition, subjects were given skills training or no training, and were administered either the cued or uncued versions of the Contextual and Word Identification Measure (CWIM).

Results showed that the modified cloze format used in the CWIM was feasible for assessment of certain reading subskills. The value of subskill training was not established. Intraword cue information was found to be a significant factor affecting replacement scores, as was the location of the intraword cue, with information in the initial position resulting in significantly higher replacement scores than information in the terminal portion of words. Form class identity of deletions was preserved in responses by a majority of subjects in all four treatment conditions across the four grammatical categories assessed in the study. Implications for future research using the CWIM format were discussed.

List of Tables
(Cont'd)

Table		Page
11	Summary of Form Class Ranges, Means, Standard Deviations, Standard Errors of Means and Confidence Intervals by Treatment Groups	48
12	Summary of Form Class Ranges, Means, Standard Deviations, Standard Errors of Means and Confidence Intervals for Cued and Uncued Groups	49
13	Summary of One Way Analyses of Variance with Dependent Variable: Form Class, Group Variables: Treatment and Cueing	50
14	Summary of One Way Analyses of Variance with Dependent Variable: Form Class Mean Diff., Independent Variables: Sex and Cell	53
15	Pearson Correlations of Form Class Performance and Total Test Performance	54

STATEMENT, BACKGROUND AND RATIONALE OF THE PROBLEM

Statement of the Problem

The goals of this study were both theoretical and applied. On one level, the study was planned to explore the feasibility of using a modified cloze technique to assess the contextual and structural analysis strategies actually in use by adults whose reading had been identified as inadequate for enrollment in technical degree programs. The question of interest in this applied area was whether such an assessment device, which offered the advantages of mirroring an actual reading situation and having an acceptable format for adults, could in fact yield information about particular adults which was specific enough to be diagnostically useful.

On another level, the study involved a more theoretical goal; to examine factors relating to the basic processing of language among the general population of adults identified as reading poorly.

At the start of this decade, there were at least 21 million functional illiterates in the United States (Harris, 1970-1971). It is not surprising, therefore, that a major concern in adult basic education is reading instruction. Since 1966, when the United States Office of Education first allocated funding specifically for adult basic education, studies on the extent of and reasons for adult illit-

instrument measuring contextual analysis strategies, such as the instrument used in this study. The reader should note that most of the research cited involved school-aged children or adult proficient readers as subjects. The author readily acknowledges, therefore, that the applicability of such findings to adult poor readers is an open issue. Nevertheless, at the present time there is little choice but to attempt to apply what is known about the studied populations to adult poor readers in order to generate testable hypotheses.

Assessment

A plethora of tests has been devised in recent years to assess reading performance. Very few, however, have been designed for adults. Of the 33 diagnostic instruments listed in a recently published text on the methodology of teaching ABE, only nine tests were written specifically for adults. Of these nine, one tested visual perception, one tested performance on only specific reading tasks, such as want ads and job applications, two were based solely on oral reading performance and contained no measures of comprehension, two others tested the basic pre-reading skills such as letter recognition and phonic correspondences, and one was based entirely on true or false answers to literal comprehension questions (Bowren and Zintz, 1977). This text also provided no tests for reading levels corresponding to grade levels five or six. The remaining two tests were both individually-administered reading inventories. These, although appropriate for adults, yield only gross reading level scores, suitable for initial screening and placement purposes, but not helpful in planning specific remedial programs.

eracy have proliferated. Recognizing the lack of reading skills as an obvious barrier to employment, such agencies as the Job Corps, the Division of Vocational Rehabilitation, social welfare groups and veterans organizations have initiated programs which pay adults to attend basic skills classes.

In recent years, the mass media, as well, have given a good deal of attention to the problems of the low-literate or nonreading adult. With all this attention, one might assume that a good deal of basic research is investigating the phenomenon of adult illiteracy and the efficacy of various remedial approaches with adults. Such an assumption would be false, however. Although funding has been available for such research programs, this funding increase has been more than offset by increased enrollments. While some publishing houses have developed sets of materials designed specifically for adult poor readers (e.g., Steck Vaughn Adult Reading Series, 1978), most publishers continue to either ignore this new market or simply offer basically juvenile materials with adult wrappings.

At the same time that adult basic skill programs are growing and multiplying, basic research focusing on adult poor readers is receiving almost no attention. Most of the research being done is applied research, typically recording the success or failure of various novel or tried-and-true teaching techniques on ABE populations. This author found no studies on specific aspects of reading process (such as phonic, structural or contextual skill development) using adult poor readers as subjects. Consequently, this review of the literature will focus on six areas which have direct bearing on the development of an assessment

readers in word/nonword recognition tasks, educational psychologists have made extensive use of the nonsense word (also called synthetic word or pseudoword) in tachistoscopic studies. In one such study (Gibson, Pick, Osser, & Hammond, 1962) college students were tachistoscopically exposed to lists of pseudowords varying in length from four to eight letters. One half of the pseudowords were constructed according to the usual rules of English spelling. These were termed "pronounceable" (e.g. GLURCK). The rest of the pseudowords were constructed to violate the normal spelling rules (e.g. CKURGL). These were termed "unpronounceable". Subjects viewed the words in exposures ranging from 50-250 msec and were later asked to spell the words. The mean percent of the "pronounceable" words correctly perceived (i.e., spelled correctly) was consistently and significantly greater at all exposure times. Results were taken to support the contention that regular spelling patterns function as a unit to facilitate the word identification process.

In a more recent study, children's ability to respond to spelling patterns as units was investigated (Gibson, Osser, & Pick, 1963). Subjects were children completing either first or third grade. A tachistoscope was used to present subjects with familiar three-letter words, pronounceable trigrams and unpronounceable trigrams (e.g. RAN, NAR and RNA, respectively). Again the task was to spell the word orally following the presentation. Subjects performed best on the real words and least well on the unpronounceable trigrams. When longer (four- and five-letter) pseudo and real words were used, performances did not vary with pronounceability. The data were interpreted to sup-

The limited availablity of tests, as described above, does not mean that instructors of adult reading classes have no way of assessing and diagnosing particular strengths and weaknesses in the skills of their adult learners, but it does put a great burden on such instructors. They must become familiar with a great variety of tests and assessment procedures, both formal and informal, in order to select and build their own diagnostic tests. Furthermore, there is little help available in interpreting and analyzing the resultant test information in order to apply it to the instructional setting.

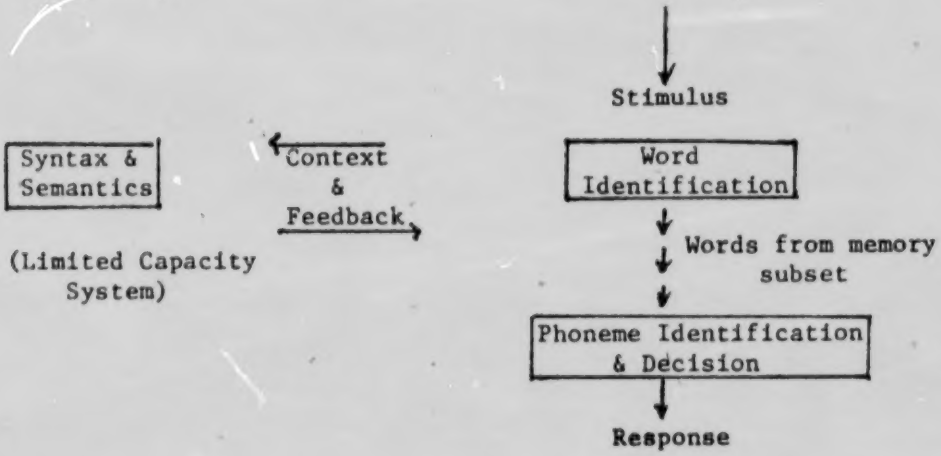
There is an enormous body of research on the word identification process. However, this author has failed to find any studies which utilize nonsense or synthetic words containing structural components of real words (cued nonsense words) as a means of investigating readers' use of word structure as a decoding strategy with unfamiliar words. For this reason, the review of the word identification literature will cover research on both intraword and contextual/syntactic constraints in the word identification process. The review focuses on the following topics within the word identification process which relate to the proposed study:

1. Nonsense Word and Pronounceability studies
2. Word Frequency and Redundancy studies
3. Positional constraint studies
4. Contextual constraint studies
5. Word Structure studies
6. Uses of Cloze formats

Nonsense Word and Pronounceability Studies

In an effort to determine the nature of the basic unit processed by

the frequencies of occurrence of given words and parts of words in normal textual usage. These lists make systematic control of word frequency possible in studies on decoding and word recognition for the first time. Morton and Long (1976) studied adult proficient readers' ability to identify target phonemes contained in (a) high transitional probability words (HTPs), (b) low transitional probability words (LTPs), and (c) nonwords (NWs). They found reaction times were significantly faster for those phonemes imbedded in HTPs. Since the sentence frames or contexts were identical in all three cases, Morton and Long concluded that the HTP words facilitated recognition of the target phonemes, rather than the reverse. They proposed the following model of word recognition (1976, p. 50).



In this model of the word recognition process, syntactic and semantic constraints promote an information processing type of memory search by narrowing the potential subset of words which fit a given context. Next, some part of the graphic stimulus (e.g., a phoneme) is sampled in order to verify the predicted "fit" word. If a high probability word is

port the notion that children in the early stages of learning to read typically perceive only short units, and make use of certain regularities in spelling-to-sound correspondences in word recognition.

Stanners and Forbach (1972) used three categories of material to determine whether letter strings are analyzed into components in the course of making word/nonword decisions. The categories were: (a) consonant-consonant-vowel-consonant-consonant nonwords (CCVCCs), (b) consonant-consonant-vowel-consonant-consonant words (WORDs), (c) consonant-consonant-consonant-consonant-consonant nonwords (CCCCCs). Within categories, the frequency of occurrence of the consonant pairs was varied. Results supported the hypothesis that information from the consonant pairs is used to address a subset of memory representations and that the size of the subset is related to the frequency of occurrence in the language of the consonant pairs.

Other recent studies (Rubenstein, Lewis, & Rubenstein, 1971; Rubenstein, Richter, & Kay, 1975) provide additional evidence that visual word recognition involves recoding into phonemic form. Because pronounceable nonsense words were found to be recognized, as such, faster than unpronounceable nonsense words, results suggested that both proficient and novice readers are making use of regular spelling-to-sound correspondences in word recognition.

Word Frequency and Redundancy Studies

In the past few years, researchers have used advanced computer programs to perform vast quantitative analyses of written English language patterns. Venezky (1963, 1970), Kučera and Francis (1967), and Morton and Long (1976) have compiled massive printouts tabulating

common and rare words are important because common words are recognized more quickly than are rare or infrequent words. To facilitate rapid word identification, research should aim at determining the specific nature of those differences. When applied to instruction, this knowledge can aid readers to become more efficient in their sampling strategies.

Many researchers have cited readers' use of orthographic structure or letter redundancies in word identification (Gibson, Osser, & Pick, 1973; Guthrie, 1973; Hochberg & Brooks, 1976). The ability to use orthographic structure "is an important developing skill that enables readers to use larger coding units. It is possible that good and poor readers have acquired basic English spelling patterns to different degrees," (Gibson et al., 1963). Guthrie (1973) stated that there may be differences among readers in the size of the letter pattern that is processed. Katz and Wicklund (1970) demonstrated that while good and poor readers do not differ in their processing units for single letters, they do seem to be differentially sensitive to letter patterns. In another study, Mason, Katz, and Wicklund (1975) speculated that the major decoding differences among readers are in the automatic use of redundant letter patterns as word identification units. In the Guthrie study (1973), an obtained interaction between comprehension level and word type was taken to support the hypothesis that poor readers engage in different processes of word identification than do proficient readers.

Hochberg and Brooks (1976) assert that the strain of reading text can be lessened by informal guessing by the reader as to what

predicted but a phoneme check rules the predicted word out, reaction time is delayed until a second memory search can be conducted to locate a lower transitional probability word from the memory subset which does contain the sampled phoneme and fits the context.

Morton's model has two critical implications for the current study: (a) portions of a word are sampled by readers to verify predictions about the identity of particular words, and (b) the particular phoneme sampled can delay or enhance the search process and hence word recognition time depending on the phoneme's probability of occurrence in the language generally.

Stanners, Jastrzembski and Westbrook (1975) investigated the word frequency effect and found a strong inverse relationship between frequency and word/nonword types. The frequency effect, however, was only half as large for nonwords as for real words. The investigators concluded that the frequency effect was localized in the memory search process which follows encoding of an item.

Another study examined structural differences between common (high frequency) and rare (low frequency) words (Landauer & Streeter, 1973). This study reported that in terms of their constituent parts and relative arrangement of parts, common words are more like other common words and rare words are more like other rare words than are common words like rare words. They also found that common words are like more other words than rare words are and that common and rare words differ in phonemic composition as well. These systematic differences between

stragegies as peripheral search guidance and cognitive search guidance must be encouraged through direct instruction and practice. Assessment of habitual strategies, however, is the first step.

English is a highly positional language. Johnson (1967) tested adult proficient readers on simple declarative sentences containing equally nonmeaningful consonant-vowel-consonant (CVC) syllables for gramatical subjects and objects. Osgood Semantic Differential ratings were used to rate the CVCs. A typical item, for example, was "The NIJ hurt the GAQ." Active subjects (NIJ) were rated as more animate than active objects (GAQ). Johnson called such differences "structural meanings" and concluded that they reflect positional, distributional properties of English. Levin and Kaplan (1968) and Levin, Grossman, Kaplan, and Yang (1972) analyzed left and right imbedded sentences in an eye-voice-span (EVS) study. They found a significantly larger eye-voice-span for the right imbedded sentences, which lent support to the notion that right imbedded sentences are more predictable. This was so even though both types of sentences contained the same words and therefore the same degree of lexical information. Other researchers (Glanzer, 1961, 1962; Cofer, 1967; Tannenbaum, Williams, & Clark, 1969; Kohlers, 1970) have studied the effects of grammatical class on word predictability. Results from these studies have been mixed. While Glanzer found that in paired-associate learning, response triplets containing function words bounded by two nonsense syllables (GIM from POF) were learned significantly faster than similar triplets containing content words (GIM church POF), Cofer found that this effect disappeared when the prounceability of the function and content words was equalized.

some syllable, word, etc., may turn out to be. By utilization of redundancies in terms of spelling patterns, grammar and idiom, the predictions can be made more accurate and hence require fewer fixations in order to obtain the message contained in the text. However, knowledge of such redundancies and their probable location in the text are critical to such a process. Simply training a reader to make fewer textual samplings (or fewer fixations) will not aid the reader unless the sampling process itself is made more effective.

Positional Constraint Studies

As reading skill develops, the reader's perceptual unit grows from a single word (or word part) to something often called a "meaningful chunk." It is at this point that word identification strategies go beyond the single word and begin to depend on meaningful parts. This developmental process is now being studied extensively to discover the nature of the mechanism controlling the text sampling process in normal, sustained reading. It has been proposed that two control systems operate together in this chunking process. The first is Cognitive Search Guidance or CSG. Because of language redundancy, a reader can use knowledge of spelling patterns, grammar, and idiom to anticipate certain words and meanings in text. Word length can also help the reader to locate those parts of the text which are likely to carry the most information, since function words (e.g., "on," "the," "for," etc.) are usually shorter than content words (verbs, nouns, adjectives, etc.). This is the second system, Peripheral Search Guidance, or PSG. In combination, CSG and PSG operate to help the reader sample the text and order the visually sampled input. If poor readers are to increase their word identification skills, such internalized and automated

toward integrating the findings on word structure, word frequency and syntactic cues into word identification and contextual analysis assessment and instruction.

Word Structure Studies

Bowren and Zintz (1977) advocate a sequenced approach for introducing basic language skills to adults. The sequence of skill development recommended is auditory discrimination, concept formation and categorization, and finally, vocabulary development to aid in the transfer of oral language elements to written codes. Sassenrath (1972-73) performed alpha factor analyses of reading measures on elementary, secondary and college adult readers and found that Word Analysis did not appear as a separate factor at the elementary level. It did emerge as an ability separate from general reading ability in the older subjects. Whether these findings suggest an area of difference between adults who are proficient readers and adults who are poor readers remains to be seen.

Gibson (1976) lists the ability to use progressively higher-order units of structure as the final phase in the progression from oral to written language. This suggests that adult poor readers may be stalled at the level of decoding letters to sounds, a stage which precedes the jump to using word parts as the basic unit of processing. If the potential regularities within words--the spelling patterns and such linguistic elements as roots and affixes--can be perceived as units, this could facilitate the transition in processing from individual letters or letter clusters to meaningful units.

Singer (1966) stated that certain word parts, such as affixes and

When Tannenbaum, et al., tested adult proficient readers using a cloze instrument containing deleted function and content words, verbatim replacement scores for function words exceeded those for content words by a two to one margin. These results were seen as the product of two factors: (a) there are far fewer function words than content words in the language, and (b) the function words are of a much higher frequency and are therefore more likely to be known to a subject. Both of these factors operate to reduce the degree of uncertainty about a function word deletion. When Kohlers (1970) had subjects orally read optically transformed text, he found that proficient adult readers tended to make word substitutions which preserved the grammatical class of the transformed stimulus words.

Contextual Constraint Studies

If the processing of connected text is facilitated by readers' use of syntactical (i.e. grammatical) patterns, it is also aided by meaning or semantic cues which exist within a sentence or surrounding it. Samuels (1970) presented adult and fourth-grade subjects with high or low frequency words in a tachistoscopic recognition task. The words were preceded by either no cue or by a high associate cue. Adult subjects recognized both high and low frequency stimuli faster with the high associate cue (e.g. "green" for either "grass" or "emerald"). This was not true for children. They recognized low frequency words as quickly without cues as with them. This is evidence for the predictive, hypothesis testing model of word identification. Unfortunately, the difficulty of delineating and controlling for the effects of contextual cues in connected text is enormous (Kingston & Aulls, 1970-71). Until such difficulties can be overcome, efforts must be directed

tion strategies. Because instructors can quickly become adept at devising cloze exercises as remedial activities, a cloze test format can also become a testing paradigm which is neither alien nor excessively anxiety-ridden to test-conscious adult learners. Short, teacher-made cloze passages can readily provide informal, periodic checks of individual progress on particular skills. Thus, if effectively used, cloze could provide a consistent and natural way of integrating assessment, instruction, practice and feedback in the total adult reading program.

Specific Problem

A survey of previous literature shows that empirical studies are needed to provide data concerning the contextual and structural analysis strategies which poorly reading adults employ. No studies were found which directly investigated the textual sampling processes of adult poor readers. In an effort to provide relevant comparative and descriptive data, the present study examined the performance of an experimental and a control group on two versions of a modified cloze instrument employing cued (Version A) and uncued (Version B) synthetic word substitutions. This instrument will be referred to as the Contextual and Word Identification Measure (CWIM). The potential effects of direct instruction on contextual and word identification strategies were also tested by including a 30-minute training session prior to the administration of the CWIM for one half of the control and experimental groups.

The CWIM yielded the following reading related variables:

roots, have generalized meaning, which can be utilized not only to unlock the meaning of a word by analyzing it into its constituent elements and then synthesizing these elements, but also can be integrated into the word-recognition substrata. Consequently, these elements have a dual function.

Other linguistic elements, such an inflected endings, could also be integrated into the word-recognition arsenal and thus supply additional cues from the grammatical redundancy of the language system. The key is to determine which elements of the language code the reader currently uses and to supplement those to increase the probability of success overall.

Uses of Cloze Formats

One possibility for assessing the reader's use of structural cues is the cloze format. Long recognized as a valid measure of the readability of specific materials, cloze has also been put to use as a classroom instructional activity (Bortnick & Lopardo, 1973). As an assessment device, cloze has many advantages. First, it allows the task to be as close as possible to the normal act of reading connected text. Second, cloze passages can be scored in a variety of ways to suit the informational needs and uses of the tester. Third, the format can be varied to allow for oral responses or for multiple choice responses (which may be valuable if handwriting or vocabulary deficiencies are severe and confounding factors).

Using a selective (rather than every nth word) deletion technique, cloze tests can be developed to assess readers' knowledge of grammatical form class, usage of semantic cues, or structural word identifica-

H_3: There will be no significant difference on Initially Cued (EVEN) and terminally Cued (ODD) items on CWIM Version A.

H_4: There will be no significant difference in performance on items of different form classes.

For either version of the CWIM:

1. Exact replacement percent correct
2. Semantic replacement percent correct
3. Syntactic replacement percent correct

For Version A (Cued) only:

4. Weighted percent correct for Initial Cue items
5. Weighted percent correct for Terminally Cued items

For combined and for versions considered separately:

6. Weighted percent correct on nouns
7. Weighted percent correct on verbs
8. Weighted percent correct on adjectives
9. Weighted percent correct on adverbs

Specifically, the following questions were addressed in this study:

1. Is there a significant difference in performance of the trained and untrained groups?

2. Is there a significant difference in performance of the Version A (Cued) and Version B (Uncued) groups?

3. Is there a significant difference in performance on initially cued words and terminally cued words?

4. Is there a significant difference in performance between noun, verb, adjective, and adverb form classes?

For research purposes, these questions are restated in the null form and fall into four categories: an hypothesis dealing with the Training Effect (H_1), an hypothesis dealing with the Cueing Effect (H_2), an hypothesis dealing with the Cue Location Effect (H_3), and an hypothesis dealing with the Form Class Effect (H_4). Restated in the null form, these hypotheses are:

H_1: There will be no significant differences in performance on the CWIM between trained and untrained groups.

H_2: There will be no significant difference in performance on CWIM Versions A (Cued) and B (Uncued).

Table 1

Subjects by Cohort and

Treatment Group

	Cohort 1	Cohort 2	Cohort 3	Totals
Treatment 1:	2	10	10	22
Treatment 2:	1	6	9	16
Treatment 3:	2	3	8	13
Treatment 4:	2	7	9	18
Totals:	7	26	36	69

METHOD

Subjects

The subject pool consisted of three cohorts (see Table 1). The first cohort included all students enrolled in a remedial reading course at a technical college in a medium-sized city in south central Wisconsin with a population of 179,000. A total of nine subjects (four men, five women) were enrolled in the course, but two men did not complete the CWIM. The final sample from cohort 1, then, consisted of seven subjects (two men, five women). Mean age of the subjects was 28 years. The subjects represent a lower middle socio-economic level.

Cohort 2 included all students enrolled in Tuesday and Wednesday sessions of a cognitive reading course at a technical college in a medium sized city in central Wisconsin during the fall of 1978. A total of 57 subjects (34 men, 23 women) were enrolled. There were 16 men and 15 women who did not complete the CWIM. The final sample from cohort 2, then, consisted of 26 subjects (18 men, 8 women). The mean age of cohort 2 was 21 years.

The subjects in cohort 3 included all students enrolled during the spring semester for the same course described above. A total of 54 subjects (25 men, 29 women) were enrolled. There were 6 men and 12 women who did not complete the CWIM. The final sample for cohort 3, then, included 36 subjects (19 men, 17 women). The mean age of cohort 3 subjects was 26 years.

were provided for each subject by technical school staff for cohorts 2 and 3. These rankings were current for the semester of enrollment in every case.

The Vocabulary and Reading subtests of the Adult Basic Learning Exam (ABLE), Level III, Form A, were administered to all subjects in cohort 1. Although it would have been preferable to have obtained reading percentile rankings for all subjects based on the same reading test, administrative problems necessitated the use of an alternative test at the cohort 1 site. Because these percentile rankings for the study were only to be used as the basis for matching groups of subjects within a cohort to reduce the within-match variability of reading level, it was felt that the use of two reading tests would not constitute a serious problem. In addition, the data would be subjected to statistical tests to determine whether, in fact, this was the case.

Within each cohort, subjects were rank ordered according to their reading percentile scores. Next, successive matches of four subjects each were randomly assigned into the four treatment groups.

Because a number of subjects did not complete the CWIM in cohorts 1 and 2, the procedure for assigning cohort 3 subjects was altered to compensate for the unequal cell sizes. Cohort 3 subjects were taken in successive matches of five each (rather than four) from the rank ordered list of percentile scores. This procedure resulted in a reserve pool of seven subjects who could then be randomly assigned to those treatment conditions with fewer subjects. A permutation of the numbers one through seven was randomly selected, namely, 3154-76-2. This permutation was then used to determine that the extra subject from matches

Treatment

Subjects in the study were randomly assigned to one of four treatment conditions. Two of the four treatments included a 30-minute training session on strategies for unlocking the meaning of unfamiliar words met in context. The training session began with an analogy comparing such strategies to those involved in working a jigsaw puzzle. The puzzle solving strategies of: (a) making use of the cover picture, (b) the distinctive features of the puzzle piece picture fragments, (c) the distinctive shapes of the puzzle pieces, and (d) the use of gap shapes in nearly completed puzzle sections. These were compared to the contextual and structural analysis strategies of: (a) use of a reader's background experience and general knowledge, (b) knowledge of affix elements in words, (c) knowledge of grammatical or syntactic cues, and (d) the immediate context of unfamiliar words, respectively.

Each problem-solving strategy was then discussed in turn, using a packet of training materials which had been distributed to each trainee (see Appendix A). Each of the four contextual and structural analysis strategies was also modeled for trainees using two brief passages included in the training packet. Finally, the training group was shown a simplified example passage (two paragraphs) illustrating the format used in the CWIM instrument. Subjects were instructed to employ the problem-solving strategies they had been shown when the CWIM instrument was administered the following week.

Procedure

Percentile rankings from the Nelson Denny Reading Test, Form C,

	Trained	Untrained
Version A (Cued)	Treatment Condition 1	Treatment Condition 2
Version B (Uncued)	Treatment Condition 3	Treatment Condition 4

Figure 1

3, 1, 5, and 4 would go to treatment condition 3, the extra subjects from matches 7 and 6 would go to treatment condition 2, etc. This rather complicated procedure allowed for the assignment of additional subjects to treatment conditions having fewer subjects without destroying the randomization of the assignment.

The study utilized matched groups of subjects in assignment to treatment conditions to reduce the masking effect which wide variability of reading level within treatment conditions was expected to have on the treatment effects in the study. By blocking, or matching, subjects on general reading ability prior to random assignment into treatments, the variance, or error, factor could be reduced to that between subjects within a particular match, rather than between all subjects assigned to a particular treatment condition. If this matching procedure is borne in mind, the design of the study can be schematized in a 2 x 2 matrix format (see Figure 1).

All testing and training was conducted by the author, although course instructors remained in the classrooms to assist in the identification of subjects. Training and testing occurred with an interval of one week for subjects in treatment conditions 1 and 3.

Subjects in treatment conditions 1 and 3 were taken to a room adjoining the regular classroom for the 30-minute training session. Following the training session, the trainees were asked not to discuss the session with other students and they were then returned to their regular classroom.

The following week, appropriate versions of the CWIM instrument

because of its adult content and format, coverage of the fundamental areas of reading, and its simplicity and efficiency of administration. There are three levels of the ABLE, but only Level III was used in this study. Level III covers achievement corresponding to school grades 9 through 12.

The Reading and Vocabulary subtests of ABLE, Level III are timed tests. The time limits, however, are provided for administrative convenience only and are quite generous, so that the ABLE is fundamentally a power test.

The ABLE Level III, Form A Reading Subtest contains 60 items and consists of two parts. The first part (45 items) includes paragraphs of varying length and complexity. Each is followed by a series of multiple choice questions designed to test the student's ability to comprehend explicit material, make inferences, and draw generalizations. (A sample page from the Reading subtest is included in Appendix C.) The second part of the Reading subtest is a newspaper reading task. After reading a facsimile of a newspaper's front page, the student answers 15 multiple choice questions designed to measure ability to both recall specific information and to form conclusions.

The Vocabulary subtest contains 60 multiple choice questions. The student listens to sentences read aloud by the examiner in which four alternative words (shown in the student's test booklet) are given for the ending of each sentence. An example of such an item in the Vocabulary test is:

[Read by examiner] "When everyone agrees, the opinion is ---"

were distributed to all subjects as they came for class during regular periods of the school day. Again, staff remained in the room to assist in identifying subjects. The tests were administered to subjects in normal classroom groups. These class groups ranged in size from 2 to 15 subjects.

At the beginning of each test administration, after distribution of the CWIM booklets, the subjects were asked to supply the information requested on the cover of the booklets. The directions for the CWIM, which were identical for both versions, were then read aloud. Subjects were advised that the test was untimed and that spelling errors were not going to be considered as long as the response was meaningful and/or legible. Trained subjects were reminded to try strategies which had been discussed the previous week . Those subjects who wished to receive letters summarizing their performance on the CWIM (see Appendix B) were encouraged to so indicate by checking the box on the cover of the booklet. Subjects were asked to work independently and to attempt all items. No reference sources, such as a thesaurus or dictionary, were allowed.

Instruments

There were three instruments used in this study. The Adult Basic Learning Exam (ABLE), Level III, Form A subtests on Vocabulary and Reading were administered to cohort 1 subjects because Nelson Denny scores were not obtainable. The ABLE is a battery of pencil-and-paper, group administered tests designed to measure the level of educational achievement among adults. It was chosen for this study

Table 2

ABLE III

Reliability Coefficients Obtained

for School and Adult Groups

Group/Test	Vocabulary	Reading
I Grade 10	.86	.87
II Grade 12	.86	.90
III Kansas GED students	.96	.95
IV Louisiana GED students	.85	.87

[In test booklet] 1 dissenting 2 unanimous 3 disputed
4 ambiguous

Table 2 reports reliability data taken from the ABLE Handbook which was obtained from a representative sample of high school and adult students numbering 2,000. The reliability data were obtained using the Kuder-Richardson Formula 21. Table 3 provides standard errors of measurement, means, and medians in raw score form for the high school and adult groups. Because the ABLE battery is a relatively recent publication, this author could find no reviews which specifically aimed at Level III subtests. However, in a review by A.N. Hieronymus in the Seventh Mental Measurements Yearbook, the ABLE battery was generally described as:

> . . . a well-conceived, well-constructed battery which should serve very well the purposed for which it was intended. Because it was developed specifically for use with adult groups, because of supporting data presented in a professional manner, and because of its generally high quality, the ABLE is recommended for use over [two other adult achievement tests].

This author had several criticisms of the ABLE tests. The Reading subtest, Part One, contained several items which were passage independent. For example, following a paragraph of the proper care of houseplants (refer to Appendix C), one question read: "You feed a plant artificially when you give it--" and the choices were 1) water, 2) sunshine, 3) light, 4) fertilizer. Another question following the same passage read: "If the same person always cares for the plant, you have an example of--" with choices of 1) consistency, 2) adjustment, 3) neglect, 4) boredom. Any adult familiar with plant care or the definition of consistency could answer these questions without ever

having read the passage. Such items as these raise questions as to the face validity of the ABLE Reading subtest.

A second possible problem with the ABLE battery lies in the fact that the Vocabulary subtest involves dictation of the question stems by the examiner. Although this procedure was used to eliminate the confounding of reading comprehension with vocabulary knowledge, it may have the effect of making speed and auditory perception confounding factors instead.

Because the ABLE percentile rank scores were only used as a means of rank ordering subjects, to reduce the within treatment error term, it was not felt that these flaws in the ABLE precluded its use as an efficient measure of general reading level.

The second instrument used in the study to rank order subjects was the Nelson-Denny Reading Test, Form C. Form C was standardized in 1972 on a national sample of high school students (sample size was 15,668), respresenting 65 high schools in 22 states. Split half reliability coefficients are presented in Table 4. These data were obtained using Pearson product moment correlations corrected by the Spearman-Brown Formula.

The test battery is designed for use in grades 9 through 16. Normal working time for the test is 30 minutes. The test provides a measure of three major elements of reading ability: vocabulary, comprehension, and reading rate. The test contains 100 items to measure vocabulary and 36 items to measure comprehension. The comprehension score is given a double weight in arriving at the total score.

Table 3

Standard Errors of Measurement
for ABLE III Form A Subtests
for the Various Test Groups

Group/Test	Vocabulary	Reading
I Grade 10	3.4	3.5
II Grade 12	3.3	3.3
III Kansas GED students	3.1	3.5
IV Louisiana GED students	3.5	3.6

There were two reviews of the Nelson-Denny Reading Test, Forms C and D in the English Mental Measurements Yearbook (1978). Both reviews cited the generally acceptable procedures used to generate items and to standardize the test. However, the reviews concluded on a similar note which stressed the relatively high level of difficulty of the test for the high school population for which the test purportively was developed. One reviewer, Robert A. Forsyth, concluded his review by indicating that:

> . . . the Nelson-Denny Reading Test appears to be most useful at the college level. At this level, if local norms are developed, the test may validly serve the predictive, screening, and diagnostic purposes for which it was developed.

Alton L. Raygor concurred in this assessment and cautioned that to use the test "on anyone other than highly selected college students or adults will produce very questionable measurement results." Since it is such a widely used battery, however, and because recent scores were made available to the author for subjects in cohorts 2 and 3, the test was considered useful for the limited screening purpose for which it was employed in this study.

The Contextual and Word Identification Measure (or CWIM), the third instrument used in the study, was developed by the author in the following manner. An expository passage was selected from the SRA Comprehensive Reading Series, Level K, entitled, "The Origins of Scotland Yard." The passage was shortened and rewritten to achieve a lower readability level than that of the original passage. The resultant passage of roughly 1,800 words was assessed via the Fry and Fog indices and achieved readability ratings of 8.4 and 8.04 grade level on these indices, respectively. Next, the content words (i.e.,

Table 4

Nelson-Denny Split-Halves Reliability Coefficients

Grade	Test	Mean	Standard Deviation	Coefficient of Reliability
9	Vocabulary	16.86	9.52	.90
	Comprehension x2	28.20	10.90	.80
	Total (V + 2 C)	45.07	18.38	.90
10	Vocabulary	20.10	11.70	.93
	Comprehension x2	31.46	11.62	.83
	Total (V + 2 C)	51.46	21.23	.93
11	Vocabulary	23.83	13.71	.95
	Comprehension x2	23.86	13.86	.84
	Total (V + 2 C)	57.51	23.81	.94
12	Vocabulary	26.57	14.60	.96
	Comprehension x2	36.42	12.20	.85
	Total (V + 2 C)	63.00	24.90	.95

and resultant list of nonsense words used). Two versions of the CWIM were then constructed.

Version B of the CWIM consisted of the 1800 word passage with the 74 nonsense words substituted for the original content words (see Appendix F). Version B will also be referred to as the Uncued version. To illustrate the CWIM's format, here is a sentence from the original passage:

> The headquarters was named for the place where it was located almost a hundred and fifty years ago.

In CWIM, Version B, the same sentence reads:

> The headquarters was named for the place where it was rinisel almost a hundred and fifty years ago."

Version A of the CWIM (see Appendix G) contained nonsense intrusions in the same portions of the passage text, but in each case, a part of the original content word was made a part of either the beginning or the ending of the nonsense intrusion. For example, the same sentence as above appeared like this in Version A:

> The headquarters was named for the place where it was locisel almost a hundred and fifty years ago.

The morpheme "loc" was reinserted at the beginning of the nonsense intrusion as a cue. Version A of the CWIM instrument will thus be referred to as the Cued version of the test.

In both versions of the CWIM, intrusions were numbered and underlined, and a numbered space was provided at the righthand margin of the text for the subject to write in his or her response. The directions, which were identical for Versions A and B, instructed the subject to

"print in this space a word which you think means the same, or could be used in place of the underlined word".

There was one additional variation of the CWIM built into Version A (the Cued version) only. Here, the cues were alternated between beginnings and endings of the intrusions so that even numbered items (37 in all) had initial parts of the original words inserted at the beginning of the intrusion, whereas the odd numbered items (also 37 items) had the endings of the original words inserted at the ending of the intrusions. This was done to facilitate further analysis of the location of the text which subjects used to decide on replacement responses if a significant effect of cueing was observed when performance on the two versions was compared.

Scoring

The Nelson-Denny Reading Test was administered and hand scored by the staff of the technical school conducting the cognitive reading course in which subjects from cohorts 2 and 3 were enrolled. Total scores on the Vocabulary and Comprehension subtests were converted to percentile rankings by the author using conversion tables for twelfth grade which were provided in the Nelson-Denny Handbook.

The ABLE, Level III tests were administered and hand scored for subjects in cohort 1 by the author according to Handbook directions. Raw scores on the Vocabulary and Comprehension subtests were totaled and converted to percentile rankings using conversion tables provided in the ABLE, Level III Handbook.

The CWIM, Versions A and B, was administered and hand scored by the author in the following manner. Each response was adjudged to

fall into one of four categories of correctness. A type 1 response was an exact replacement of the original, deleted word. A type 2 response was meaningful in the context of the sentence containing the intrusion. A type 3 response was one which preserved the grammatical form class of the original, deleted word. A type 4 response was either illegible, left blank, or none of the above.

This scoring procedure produces three categories which are successively inclusive, e.g., a type 1 response is also correct in terms of the criteria for type 2 and 3, and similarly, a type 2 response is automatically correct under the criteria for type 3. This logical inclusiveness of scoring categories facilitated a weighting procedure used in the data analysis of subjects' total scores

To minimize the variability in scoring, all tests of both CWIM versions were scored by the author. Questions as to the grammatical form class of responses were resolved by reference to a dictionary.

Data Analysis

Four questions, listed in the next section, were used to examine subjects' performance under the four treatment conditions in the study. Data were analyzed using the data analysis facilities of the Wisconsin Research and Development Center for Individualized Schooling at the University of Wisconsin-Madison. Questions 1, 2, and 3 involved the use of a one-way analysis of variance procedure which is equivalent to the *t*-test and which is particularly suited to small samples. Question 4 involved a transformation of the raw scores to allow for equal weighting of type 1, 2, and 3 responses.

Following this data transformation, Question 4 was also examined using the one-way analysis of variance procedure. The reliability of the CWIM instruments was evaluated using LERTAP, an item analysis program developed at the University of Ontago, Dunedin, New Zealand, by Larry Nelson. The level of significance accepted in the study was $p < .05$.

RESULTS AND DISCUSSION

Descriptive data on the CWIM, Versions A and B, are presented, followed by a discussion of the CWIM subtest variables as they pertain to each of the questions dealt with in the study.

Descriptive Data

Summary descriptive data for the CWIM, Versions A and B, are presented in Table 5. For reasons of comparability, all data are expressed in terms of the percentage of correct items. Because the scoring procedure involved rating the correctness of a response (see Scoring, p. 32, Chapter 2), the response categories were weighted during data analysis so that an exact (type 1) response received a weight of 3, a semantic (type 2) response received a weight of 2, a syntactic (type 3) response was given a weight of 1, and an illegible, blank, or totally incorrect response (type 4) was weighted 0. With this weighting procedure then, a subject who had exact responses to all 74 items on either version of the CWIM, could attain a maximum raw score of 222, or 3 times 74.

Item analyses were performed on CWIM Versions A and B in order to obtain reliability data and to identify items which may have performed irregularly. The item analyses provided two kinds of reliability data: first, the reliability of individual items within a version, and second, the reliability of each version considered as a discrete test. Table 6 presents Hoyt reliability coefficients for

Table 5

Summary of CWIM Ranges, Means, Standard Deviations, Standard Errors of Means and Confidence Intervals of Percentage Correct Scores

Group	N	Range	Mean	SD	SE_M	95% Confidence Interval
Cued	38	33-208	150.7	34.30	5.56	139.4, 169.0
Uncued	31	6-170	114.0	33.19	5.96	101.9, 126.2
Trained	35	6-208	141.1	40.74	6.89	127.1, 155.1
Untrained	34	39-197	127.2	34.72	5.95	115.1, 139.3
Total	69	6-208	134.2	38.26	4.61	125.0, 143.4

Table 6

CWIM Hoyt Reliability Estimates by Version

Version	No. Items	Hoyt Rel. Est.	Standard Error Measurement
A (Cued)	74	.96	7.30
B (Uncued)	74	.97	6.87

both versions of the CWIM. As the data in Table 6 indicate, both tests performed extremely well as judged by the criteria normally used in the standardization of tests. Even such high reliability coefficients as those shown for the CWIM versions in Table 6, however, do not necessarily establish that a diagnostic test is valid. For a diagnostic test, validity must ultimately be based on other measures, such as concurrent validity studies with established diagnostic instruments and, finally, on clinical experiences involving the use of the new instrument, followed by remediation efforts and posttesting to measure instructional gains. Such validation was beyond the scope of the present study. Reliability coefficients of .96 for Version A and .97 for Version B do suggest, however, that the tests produced a reasonable spread of scores, and the item analyses, upon which the Hoyt coefficients are based, indicated no items which were performing poorly. It is safe to assume, in addition, that a subject's score on particular groups of items within the test would be reasonably predictive of his score on the total test providing his contextual and structural analysis abilities were fairly evenly developed. When this is not the case, the CWIM instruments would lend themselves to subtest scoring of the kind typically done in skills mastery and other diagnostic tests.

Questions

1. Is there a significant difference in performance of the trained and untrained groups?

Data for the one-way analysis of variance procedure used to examine this question are presented in Table 7. The training factor, shown in the table under the Source column by the label "Groups," achieved an F-ratio of 2.30 with probability .1337, was not significant. Because the constraints of the study precluded devoting more than 30 minutes to the training sessions, this finding of nonsignificance was expected and does not rule out the potential effects of training for longer periods of time.

2. Is there a significant difference in performance of the Version A (Cued) and Version B (Uncued) groups?

Table 8 presents results of the one-way analysis of variance procedure used to examine this question. The cueing factor, listed in Table 8 under the Sources column as "Groups," achieved an F-ratio of 20.10 with probability of less than .00005. Thus the cueing factor was highly significant. This suggests that among the adults tested, the presence of intraword cues was used to produce significantly higher scores than were produced when intraword cue information was not available. These results also suggest the possibility of creating an instrument which would be a blend of Versions A and B so that scoring of an individual's responses could permit an instructor to assess the student's reliance on intraword information in relation to his or her reliance on supraword cues.

3. Is there a significant difference in performance on items with initial cues and those with terminal cues?

This question, actually nested within the cueing factor, was examined in the following manner: responses from only those subjects

Table 7

One-Way Analysis of Variance to Examine Training Effects

Source	SS	DF	MS	F-Ratio	Probability
Mean	1243255.7	1	1243255.7	865.75	.0000
Groups*	3308.8	1	3308.8	2.30	.1337
Within Groups	96215.4	67	1436.1	-	-
Total	1342780.0	69	-	-	-

*Groups corresponds to Training Effects

Table 8

One-Way Analysis of Variance to Examine Cueing Effects

Source	SS	DF	MS	F-Ratio	Probabilit
Mean	1243256.	1	1243256.	1088.06	.0000
Groups*	22968.	1	22968.	20.10	.0000
Within Groups	76557.	67	1142.6	-	-
Total	1342780.	69	-	-	-

*Groups corresponds to Cueing Effects

who received Version A (Cued) were analyzed as if the version contained two subtests. Subtest EVEN consisted, then, of the 37 items containing cues in the initial part of the intrusion, while Subtest ODD consisted of the 37 items containing cues in the terminal part of the intrusion. Table 9 presents descriptive statistics and results of the analysis of variance procedure used to examine this question. The dependent variable in this instance is percent correct on even items minus percent correct on odd items.

Table 9 indicates quite clearly that performance on items containing initial cues (even) was significantly greater than performance on items containing cues in the terminal part of the intrusion. The comparison yielded an F-ratio of 50.73 with probability less than .00005. The difference in performance was consistent and large regardless of whether subjects received training or not, as evidenced by the non-significant F-ratio for "Groups," of .82 with probability .3725, which represented the Training factor in this analysis.

Table 10 presents similar descriptive and analysis of variance information when sex was designated as the independent or group variable. Once again, performance on initial cue items was significantly better than on items with terminally located cues and the effect was significant for both sexes. The variable corresponding to sex, shown in the table under the Source column as "Groups," achieved an F-ratio of .67 with probability of .4188.

4. Is there a significant difference in performance between items of noun, adjective, verb and adverb form class?

To examine the data for performance difference among the form

Table 9

Summary of Even-Odd % Ranges, Means, Standard Deviations, Standard Errors of Means and Confidence Intervals of Percentage Correct Scores

Group	N	Range	Mean	SD	SE_M	95% Conf. Interval
Treatment 1	22	(-2.71)-29.73	9.705	8.775	1.871	5.184, 13.596
Treatment 2	16	(-2.71)-37.84	12.499	10.251	2.563	7.038, 17.961
Total 1 + 2	38	(-2.71)-37.84	10.882	9.393	1.524	7.794 , 13.969

One-Way Analysis of Variance to Examine Cue Location Effect

Source	SS	DF	MS	F-Ratio	Probability
Mean*	4499.533	1	4499.533	50.73	.0000
Groups	72.332	1	72.332	.82	.3725
Within Groups	3193.290	36	88.703	-	-
Total	7765.155	38	-	-	-

*Mean corresponds to Cue Location Effect

Table 10

Summary of Even-Odd % Ranges, Means, Standard Deviations, Standard Errors of Means and Confidence Intervals of Percent Correct Scores with Sex as A Group Variable

Group	N	Range	Mean	SD	SE_M	95% Conf. Interval
Males	25	(-2.71)-37.84	11.784	9.958	1.992	7.674, 15.895
Females	13	(-2.71)-21.62	9.145	8.29	2.301	4.131, 14.160
Total	38	(-2.71)-37.84	10.882	9.395	1.524	7.794, 13.696

One-Way Analysis of Variance with Dependent Variable: Cue Location, Group Variable: Sex

Source	SS	DF	MS	F-Ratio	Probability
EVEN-ODD %	4499.533	1	4499.533	50.52	.0000
SEX	59.564	1	59.564	.67	.4188
Within Groups	3206.058	36	89.057	-	-
Total	7765.155	38	-	-	-

classes, the weighting procedure used in analyzing subjects' responses earlier in this chapter was altered to make exact replacements, semantic and syntactic responses all of equal weight, or in other words, equally correct. Because Question 4 deals only with the issue of grammatical category, assigning equal weights to all responses of the correct form class was the only weighting procedure consistent with the criteria implicit in the question. In interpreting the data tables to follow, therefore, the reader should be aware that all analyses pertaining to Question 4 were based upon a more inclusive definition of correctness than the preceding analyses.

Descriptive statistics on form class performance are given in Table 11 for each of the four treatment groups. Table 12 provides similar descriptive information when the cueing factor is considered regardless of training. In each form class category, subjects with the cue information scored higher than subjects without such information. The difference in cued versus uncued performance is particularly apparent for items of the adverb form class. Here, subjects with cue information achieved a mean percent correct of 82.89, compared to 58.87 mean percent correct for subjects without cue information.

Significance tests were performed on the form class categories through one-way analysis of variance procedures, with form class as the dependent variable and either treatment condition or cueing as group variables. Resultant F-ratios and significance probabilities for these analyses are shown in Table 13. With the exception of the adverbial form class, neither treatment nor cueing effects were found to be significant. Performance on adverb items was significantly different

Table 11

Summary of Form Class Ranges, Means, Standard Deviations, Standard Errors of Means and Confidence Intervals by Treatment Groups

Form Class	Treatment Group	N	Range	Mean	SD	SE_M	95% Conf. Interval
Nouns	1	22	24.14-100	85.74	16.46	3.51	78.44, 93.04
	2	16	62.07-100	87.72	10.23	2.56	82.27, 93.17
	3	13	3.45-100	83.02	25.24	7.00	67.77, 98.28
	4	18	27.59-100	77.78	17.35	4.09	69.15, 86.41
Verbs	1	22	10.53-100	78.95	21.18	4.52	69.56, 88.34
	2	16	68.42-100	81.25	10.16	2.54	75.83, 86.66
	3	13	10.53-94.74	74.49	21.04	5.83	61.78, 87.21
	4	18	15.79-89.47	72.51	16.79	3.96	64.16, 80.87
Adjectives	1	22	22.73-100	83.88	16.82	3.59	76.43, 91.34
	2	16	54.55-100	82.95	13.53	3.38	75.74, 90.16
	3	13	0-100	79.37	24.94	6.92	64.30, 94.44
	4	18	40.91-100	77.78	13.85	3.26	70.89, 84.66
Adverbs	1	22	0-100	84.09	27.33	5.83	71.97, 96.21
	2	16	50-100	81.25	17.08	4.27	72.15, 90.35
	3	13	0-100	69.23	29.14	8.08	51.62, 84.86
	4	18	0-100	51.39	31.47	7.42	35.74, 67.04

Table 12

Summary of Form Class Ranges, Means, Standard Deviations, Standard Errors of Means and Confidence Intervals for Cued and Uncued Groups

Form Class	Treatment Group	N	Range	Mean	SD	SE_M	95% Conf. Interval
Nouns	Cued	38	24.14-100	86.57	14.04	2.28	81.96, 91.19
	Uncued	31	3.45-100	79.98	20.79	3.73	72.35, 87.60
Verbs	Cued	38	10.53-100	79.92	17.26	2.80	74.25, 85.59
	Uncued	31	10.53-94.74	73.34	18.38	3.30	66.60, 80.08
Adjectives	Cued	38	22.73-100	83.49	15.33	2.49	78.45, 88.53
	Uncued	31	0-100	78.45	18.92	3.40	71.51, 85.39
Adverbs	Cued	38	0-100	82.89	23.33	3.78	75.23, 90.56
	Uncued	31	0-100	58.87	31.32	5.63	47.38, 70.36

Table 13

Summary of One-Way Analyses of Variance with Dependent Variable: Form Class, Group Variables: Treatment and Cueing

Form Class	Treatment		Cueing	
	F-Ratio	Probability	F-Ratio	Probability
Nouns	1.07	.3693	2.45	.1220
Verbs	.84	.4772	2.34	.1311
Adjectives	.52	.6729	1.50	.2251
Adverbs	5.67	.0016	13.32	.0005

between treatment groups, with an F-ratio of 5.67, probability .0016. When Cueing was the group variable, the F-ratio for the adverb replacement differences became even larger, F-ratio of 13.32 with probability of .0005, suggesting that subjects receiving cue information, who actually received the "-ly" ending in three of the four adverb items, recognized this syntactical information and used it effectively to provide responses of the adverb form class.

Each of the six form class comparisons were then examined using a one-way analysis of variance technique with Form Class A percent correct minus Form Class B percent correct as the dependent variable, and with sex and treatment conditions as group variables in successive analyses. For ease of comparison, Table 14 provides the resultant F-ratios and significance probabilities from all 12 analyses together in one table.

Of the six form class comparisons, only Verb percent correct minus Adverb percent correct failed to reach the significance level of $p < .05$ used in this study. The Verb/Adverb comparison yielded an F-ratio of 3.19 with probability .0784. There were no significant differences between sexes in form class performance. Treatment condition differences were significant in only those form class performances involving adverbs.

Table 15 presents Pearson correlations of form class performance with total test performance in matrix form. The correlations indicate that nouns were most highly correlated to total test performance ($r = .931$), while adjectives ($r = .860$) were least correlated to total test performance. The correlations are all fairly high, however, which should caution against making too much of the observed differences. It

Table 14

Summary of One-Way Analyses of Variance with Dependent Variable: Form Class Mean Difference

Group Variables: Sex and Cell

Mean Difference Form Class	F-Ratio	Probability	Independent Variables	F-Ratio	Probability
			CELL*	.27	.8459
Nouns-Verbs	31.47	.0000	SEX*	.47	.4970
			CELL*	.80	.5003
Nouns-Adjectives	4.30	.0420	SEX*	1.19	.2797
			CELL	5.71	.0016
Nouns-Adverbs	19.64	.0000	SEX*	.06	.8147
			CELL*	.26	.8544
Verbs-Adjectives	7.32	.0086	SEX*	.08	.7827
			CELL	5.81	.0014
Verbs-Adverbs	3.19	.0784*	SEX*	.01	.9429
			CELL	5.86	.0013
Adjectives-Adverbs	10.17	.0022	SEX*	.05	.8260

* Failed to reach significance level of $p < .05$.

Table 15

Pearson Correlations of Form Class Performance and Total Test Performance

	Nouns	Verbs	Adjectives	Adverbs	Total Test
Nouns	-				
Verbs	.847	-			
Adjectives	.849	.772	-		
Adverbs	.690	.646	.595	-	
Total Test	.931	.884	.860	.873	-

may well be that the passage provided varying contextual and syntactic information about different form classes and therefore produced the small differences observed in the study. Such extraword variables would have to be strictly controlled to make any meaningful conclusions about differences in form class performance.

SUMMARY, CONCLUSIONS, AND IMPLICATIONS

Summary and Conclusions

The purpose of this study was to explore the feasibility of a modified cloze technique to assess the contextual and structural analysis strategies of nonproficient adult readers, and to examine factors relating to the basic processing of language among these adults. Sixty-nine adult students, enrolled in remedial reading courses, were randomly assigned to one of four treatment conditions:

1. A 30-minute training session. Administration of Cued test instrument.
2. Administration of Cued test instrument only.
3. A 30-minute training session. Administration of Uncued test instrument.
4. Administration of Uncued test instrument only.

Subjects responses to the Cued and Uncued test instruments were scored and weighted according to the following criteria:

1. Exact replacement of deleted word--weight 3.
2. Semantic replacement of synonym for deleted word--weight 2.
3. Syntactic replacement or same form class as deleted word--weight 1.
4. Incorrect response or left blank--weight 0.

Four specific questions were answered in this study:

1. Is there a significant difference in performance of the trained and untrained groups?

Although the training group did perform somewhat better (mean percent correct 141.1) than the untrained group (mean percent correct 127.2), the

training effect was not statistically significant. There is a strong possibility that the brevity of the training session accounts for this finding. The difference between trained and untrained groups was noticeable, in the expected direction, and therefore warrants further exploration.

2. Is there a significant difference in the performance of the Cued and Uncued groups?

The Cueing Factor was highly significant, achieving an F-ratio of 20.10 with probability less than .00005. These results support Morton and Long's two-stage model of the word recognition process in which syntactical and semantic constraints (present in both versions of the CWIM) first act to narrow the potential subset of words which will fit a given context, and secondly, portions of the word are sampled in order to verify the predicted "fit" word. When portions of the deleted word were not available to subjects, as in the Uncued version of CWIM, replacement performance was considerably below (mean percent correct 114.0) that of subjects receiving portions of the deleted word as cues (mean percent correct 150.7). The subjects in this study did make use of intraword information to make meaningful replacements in the text when such information was available. Comparable subjects in the Uncued control group made significantly fewer meaningful responses.

3. Is there a significant difference in performance on initially cued words and terminally cued words?

Once it had been established that subjects were making use of intraword cues, the relative utility of initially and terminally located cues was examined. Cue Location was found to be a significant

effect (F-ratio 50.73, probability less than .00005). Initial cues were far more helpful in the replacement task than terminal cues. This finding is consistent with research on children in the early stages of reading acquisition which found a tendency for the children to guess the identity of an unfamiliar word from the first few letters.

The significance of the Cue Location Effect also confirms a syntactic characteristic of the English language. Roots and prefixes, which normally occur toward the beginnings of words, generally convey more specific meaning than do suffixes or inflected endings, which fall at the terminal portion of words. Suffixes and inflected endings often specify only the grammatical role which the root word is to play in a given context. To borrow an example from the CWIM, given the stimulus coöperalede in context, many readers would quickly narrow the range of predicted "fit" words to those beginning with the letters coöp, such as coöperative, coöperate, etc. They then used context or grammatical cues to pick the proper form from this relatively small subset of predicted "fit" words. But what if the stimulus were arriserative instead? Here the potential subset of "fit" words is much larger: any words of the form class adjective containing the "-ative" ending. Potentially far more words would need to be considered for meaningfulness against the contextual background before a correct choice could be made. Yet each portion of the real word coöperative conveys useful information to a relatively proficient reader. If he happens to be unfamiliar with the coöp-concept, he can at least glean from the word ending that the word is being used as an adjective and he can continue on through the text, gradually filling in the concept as he goes. If, on the other hand, he

knows what a coöp is but has never encountered the adjective form before, he can use the syntactical constraints or position of the word in the sentence to infer that, in this instance, the coöp concept is being used descriptively. These flexible strategies utilizing different samplings of the text are not necessarily available to the less proficient reader. Often, the mere length of a word such as coöperative will lead the reader to skip the word entirely. If he is habitually a "first-few-letters guesser", he may mistake coöp for coop and become further confused as he attempts to relate "coopness" to that described in the text. Since all readers will encounter unfamiliar words, there is no excuse for a remedial methodology which does not encourage them to use an efficient and informed textual sampling process.

4. **Is there a significant difference in performance between noun, verb,** adjective, and adverb form classes?

In each of the four grammatical categories used in the CWIM, subjects with cue information performed better than did subjects without such information. Trained groups did slightly better than control groups in all cases except nouns and verbs. Cued groups did better than uncued groups in all cases, but the differences were statistically significant only in comparisons involving adverbs. The F-ratio for Cueing in the case of adverbs was 13.32 with probability .0005.

When Kohler (1970) had proficient adult readers optically transform text, subjects tended to make word substitutions which preserved the grammatical class of the transformed words. When uncued subjects in the present study were given the analogous task of replacing nonsense words in context, these less proficient readers also tended to

make replacements which preserved the grammatical category of the deleted words, with a grammaticaly correct mean score of over 70% across all four form class categories. These results seem to suggest that less proficient adult readers also use grammar as a cue to word identification.

Differences in performance among the form class categories were not significant except in those comparisons involving adverbs. In adverb comparisons, however, treatment effects were significant (F-ratio 5.67, probability .0016). It was Cueing, rather than training, which seemed to have been the major factor, since the F-ratio rose to 13.32 with probability .0005 when cueing instead of treatment was used as the group variable. Caution is warranted in interpreting the results of the comparison involving adverbs, however, because in three of the four adverb items, cued subjects received the "-ly" ending as the cue. Therefore it is not surprising that a significant number of subjects preserved the adverbial ending in their responses. The data do indicate that less proficient readers are sensitive to such a redundant letter pattern, and used it to select adverbial responses even though they were not told which part of any of the nonsense intrusions would contain potentially useful information.

The final issue of interest in this study was the feasibility of the CWIM as an assessment device. Certainly the CWIM was found to be reliable, with Hoyt reliability coefficients of .96 and .97 for Versions A and B, respectively. But such coefficients are based on the statisfical assumptions used to develop normed, standardized tests. Meaningful subtest scoring was possible, as demonstrated in the Cueing,

Cue Location and Form Class analyses. A majority of subjects completing the CWIM were sufficiently interested in it to request a letter explaining the test and summarizing their performance on it. Unsolicited comments from subjects involved in the study were favorable in all but one case. Comments about the test ranged from "Gee--that was a nice change of pace." to "I really enjoy crossword puzzles, you know, and your test reminded me of one."

Because the CWIM was used as part of an experimental study here, certain possibilities important to diagnostic testing were not explored. For example, if the CWIM were to be used diagnostically, the cued and uncued versions should be merged to allow for subtest scoring of cued and uncued intrusions for a given subject. A variety of forms would need to be devised in order to assess discrete reading subskills such as knowledge of suffixes and inflected endings. Baseline data would have to be established for each student by pretesting so that comparisons could be made with successive evaluative testings.

It was apparent during scoring of the CWIM instruments that certain changes should be made prior to any future administration of the tests:

1. Cue information should conform in all cases to meaningful subparts of the deleted words. For example, in the case of of an initial cue for the original word "enforcement," the cue should be "enforce____" rather than "enfo.____" as used in the current version. If the cue was terminal, it should be restricted to the noun affix "-ment."

2. The distribution of items assessing the various form classes should be such that each subset contains at least 10 items in order to make subtest scoring of each form class more reliable. In the present version, there were only four adverb items, three of which supplied the "-ly" ending as cue information.

3. Certain nonsense intrusions should be revised to eliminate auditory or visual similarity to real words. For example, in CWIM Item 26, "streetlights" was deleted and the nonsense intrusion "chramepoost" used in its place. The "poost" portion of this intrusion suggested "post" to many subjects and thus resulted in many subjects supplying "streetpost(s)" as a response. A similar problem was apparent in Item 30 where the nonsense intrusion for the original adjective "twisted" was "shaplas". Here many subjects supplied "shapeless," which demonstrated the suggestiveness of the nonsense intrusion.

4. An effort should be made to schematize the contextual information available for each item so that the utilization of this information can be assessed for a given subject. For example, in Item 58, the word "innocent" has been deleted. The following sentence repeats the word, used in identical descriptive fashion. With other deletions, however, context information is either minimal or occurs textually far removed from the location of the deletion item.

Because the CWIM format forces the reader to use a large spectrum of reading strategies, including word structure, context clues, grammar and idiom, it has the effect of focusing attention on reading as an active, searching, information processing activity, rather than allowing the reader to see it as a relatively passive, "pick-the-right-answer" exercise.

In summary, the following conclusions were drawn from the study:

1. The modified cloze format used in the CWIM was feasible for assessing the contextual and structural analysis strategies of the population of nonproficient adult readers at which it was directed. The CWIM tests were reliable, and facilitated subtest scoring to yield specific, diagnostically useful information.

2. The value of direct training of nonproficient adult readers in a variety of word identification techniques was not firmly established by the study. To do so would require longer training sessions with opportunity for practice of the various techniques involved. The consistently positive mean differences between the trained and untrained groups justify further exploration of training possibilities.

3. The nonproficient adult readers of the study used cueing information in a manner confirming Morton and Long's model of

language processing. The location of the cueing information was significant, indicating that one or both of the following was true: either the subjects were "first-few-letters guessers" or that a textual sampling strategy using the initial parts of words is more effective than one utilizing word endings for accurate identification of most words. The effect of cue location, critical to an understanding of how readers deal with text, should be investigated further to resolve this question.

4. Nonproficient adult readers preserved the form class of deletions just as Kohler's proficient adult readers. Grammatical structure was used effectively by both groups in replacement tasks. Further studies should be planned to determine to what degree proficient readers surpass nonproficient readers in this ability and to delineate factors such as vocabulary knowledge which contribute to those differences between the two groups.

Certainly there is a need for further empirical studies on adults whose reading is beyond the level of the Adult Basic Education program, and yet whose reading proficiency is not sufficient to allow them to enter vocational programs. Caution should be used in drawing inferences and conclusions from the present study. The testing instruments were newly created and should be subject to revision and modification. The sample was too small to be considered representative of the general population of less proficient adult readers, and was confined to two technical colleges in one state.

Limitations to be considered in examining results of the present study included:

1. Since the CWIM is still in a formative stage, future revisions may prove to be more valid or reliable and therefore may provide different results.

2. Since two different general reading tests were given to block out variability in reading skills prior to random assignment to treatments, variance within matches of subjects may have affected results.

3. Since all subjects were enrolled in pretechnical remedial reading courses, different results might occur with a sample of adults not oriented towards technical careers.

4. Since all subjects were from one state, other results might occur in different geographical areas.

Implications

Given the present study, it appears that further research should be undertaken to examine the following:

1. Replication of this type of study with subjects of higher and lower reading level to see if similar findings are obtained.

2. Replication of this type of study with additional time allotted to training of the word identification strategies.

3. Replication of this type of study with the experimental group undergoing a course of instruction using a variety of instructional cloze exercises rather than traditional workbook activities.

4. A correlational study of various types of reading diagnostic tests and the CWIM.

5. Several longitudinal case studies involving the use of CWIM as the diagnostic tool, with subsequent remediation and CWIM posttesting to examine the issue of diagnostic validity and reliability.

APPENDIX A

Packet of Training Materials
Used for Treatment Groups 1 and 3

BEST AVAILABLE COPY

of all Appendices

FOCUSING IN ON THE WORD

Prefixes and Suffixes

1. You can often tell what role the word plays in a sentence by looking at the ending (suffix).

   Nouns: -ation, -tion, -ion, -hood, -ist, -ant, -ent, -ence, -ance, -er.

   Kind of person: -ian, -ent, -ant, -ee, -er, -or, -ster.

   Adjectives: -ative, -tive, -ic, -ous, -ish.

   Adverbs: -ly, -ily, -ally.

2. You can also classify prefixes and suffixes by their meaning:

   Negatives: mal-, dis-, un-, im-, non-, anti-, in-, a-, il-, ir-.

   Locational: under-, over, circum-, pre-, post-, sub, trans-.
   (Locations may be in space or in time)

   Numerical: uni-, mono-, bi-, tri-, quad-, hetero-, centi-.

   By degree: hyper-, arch-, ultra-, super-.

3. Telling when words contain prefixes and suffixes and when they don't is an important skill:

   Examples: region review presort pregnant

   dishonest discipline

   table list typist trial

   original

   One test is to say the root word to yourself...is it recognizable as a whole word which could stand on its own? If so, the part you suspect probably is a prefix or suffix.

FOCUSING ON THE CONTEXT

The antidisestablishmentarian policies of the new prince caused him to reopen many churches which had been closed down by his predecessor. The new prince believed churches had the right to own buildings and hold services. Anti-church forces had lost the battle.

The Case for ADDITIVES, or, You Know More Words than You Think You Know!

Below are examples of words we all know which have been changed to fit new surroundings. Once we learn to quickly recognize the old word and see how the added parts change it to make it fit, we have added many new words to our speaking and reading vocabularies.

1. Coach Anderson never yelled when he was _____ with a player's performance. He always spoke softly.

   pleasing displeased pleasantness

2. Because everyone makes errors, most doctors now buy _____ insurance in case they are sued by a patient.

   practically impractical malpractice

3. The _____ of some politicians has caused many people to stop voting. These people feel no candidate can be trusted.

   dishonesty honestly honor

4. The pain was so _____ that the accident victim passed out.

   bearer bearable unbearable

5. Pure water is almost _____.

   tasting tasteless tastefully

6. "Stop tilting in your chair. You might fall _____ and get hurt!"

   backwards backing background

A Disgusting Habit

The pencil chewers constitute one class of unfortunates whose sickness science has failed to relieve. These maladjusted creatures cannot see a pencil without being siezed by an irresistable urge to eat it. Their numbers are increasing, and something ought to be done, for their wellbeing and in the interest of forest conservation.

I am writing this letter in a fit of pique because a moment ago I picked up a masticated pencil. Most pencil eaters nibble the unsharpened end, but this pencil had been permanently disfigured. Clearly the chewer who disabled this pencil is an habituate and is probably incurable. In such an untreatable case, the only sensible course is to provide the beaverish creature all the pencils h/she can consume, so that h/she may succumb to lead and cedarwood poisoning as quickly and mercifully as possible. Hopefully, h/she will find peace and contentment in some pencilless Beyond.

Signed:

Peter Penworthy

President, Pencil Protectionist League

SAMPLE PASSAGE

Mrs. Emory lived in a little house. Her (1) malkum door looked out on tall trees. In the summer, the kitchen door (2) skeed wide open.

Charles Workman (3) fexed in a big two-story house nearby. The Workman family were new in the (4) bribengoof. Charles and Mrs. Emory had become good friends. He liked to sit on the (5) brens outside her door and watch her make cookies.

Day after day Mrs. Emory made (6) poosies in her kitchen. No one in the neighborhood knew why.

(1)_____

(2)_____

(3)_____

(4)_____

(5)_____

(6)_____

APPENDIX B

Letters to Study Participants

WISCONSIN RESEARCH AND DEVELOPMENT CENTER
FOR INDIVIDUALIZED SCHOOLING

UNIVERSITY OF WISCONSIN-MADISON SCHOOL OF EDUCATION
1025 W. Johnson Street Madison, Wisconsin 53706 (608) 263-4200

Dear

Here are the results from the Scotland Yard passage you responded to:

% of your answers were exactly the same as the words in the original article.

% of your answers were good synonyms or meant nearly the same as the original words in the article.

% of your answers were words which fit the sentences, that is, they were grammatically correct.

% were either left blank or didn't fit the story.

The blue test, which you took, contained no clues to the identity of the original words except that the length of the nonsense words was the same. There was another version of the test which contained parts of the real words. By examining how people of similar reading ability did on both versions of this test, I hope to learn more about where adults look for information about new words when they meet them in everyday reading. Thank you again for agreeing to participate. Good luck in your future studies.

Sincerely,

Judy Schwenker

Judy Schwenker
Research Assistant

JS:kf

WISCONSIN RESEARCH AND DEVELOPMENT CENTER
FOR INDIVIDUALIZED SCHOOLING

UNIVERSITY OF WISCONSIN · MADISON SCHOOL OF EDUCATION
1025 W Johnson Street Madison Wisconsin 53706 (608) 263-4200

Dear

Thank you very much for participating in the study I recently conducted at Fox Valley Technical Institute. Here are the results from the Scotland Yard passage you responded to:

% of your answers were exactly the same as the words of the original article.

% of your answers were good synonyms or meant nearly the same as the original words in the article.

% of your answers were words which fit the sentences, that is, they were grammatically correct.

% were either left blank or fit none of the categories above.

The yellow version of the article, which you worked on, was designed with clues as to the identity of the original words built into each nonsense word. In each case, either the first or last half of the original word was contained in the nonsense word. On those nonsense words with clues from the first part of the word, you scored % correct. On words with clues at the end, you scored % correct. By examining such information as this, I hope to develop a test which will allow instructors to teach just those skills which adults lack in order to be able to unlock the meaning of unfamiliar words, rather than teaching every student every skill.

Thank you again for agreeing to participate and good luck in your future studies.

Sincerely,

Judy Schwenker

Judy Schwenker
Research Assistant

JS:kmf

APPENDIX C

Directions and Sample of the
ABLE, Level III, Form C
Subtest, Reading

APPENDIX C

Directions and sample page from the ABLE. Level III, Form C Subtest on Reading, Harcourt Brace Jovanovich, Inc., 1971, p. 11.

Directions: Read each paragraph below; then read the questions which follow it. Decide which word or phrase best answers each question about the paragraph. Then, on your answer sheet, fill in the space which has the same number as the answer you have chosen.

To grow house plants successfully, the correct planting medium is of utmost importance. A lightweight potting soil is preferable; the plant should be started in an environment close to that of its original habitat. One should pick a pot of such size that the plant fits snugly. As the plant grows, it should be transplanted into a pot of compatible size. In most cases, it is better to under-water than to over-water. But in any case, the same person should care for the plant so that it can adjust to a certain kind of care or even neglect. The placement of a plant with regard to daylight is important; plants such as African violets and geraniums demand more light than, say, philodendrons. Regular feeding of some sort of fertilizer will result in stronger stems, more aundant leaves with better color, and more blossoms when flowers appear.

15 Which of these headlines would be best for this article?
- 1 Don't Forget to Water the Plants
- 2 How to Succeed with House Plants
- 3 Big Plants Need Big Pots
- 4 Your Plants Need Water and Sunshine

16 The size of a flower pot should be determined by the--
- 5 original habitat of the plant.
- 6 size of the fully grown plant.
- 7 present size of the plant.
- 8 amount of sun the plant gets.

17 You feed a plant artificially when you give it--
- 1 water.
- 2 sunshine.
- 3 light.
- 4 fertilizer.

18 In this context, medium means--
- 5 fortune teller.
- 6 instrument.
- 7 size.
- 8 environment.

19 If the same person always cares for the plant, you have an example of--
- 1 consistency.
- 2 adjustment.
- 3 neglect.
- 4 boredom.

APPENDIX D

NONSENSE WORD RATING SHEETS

APPENDIX D

NONSENSE WORD RATING SHEETS

Name:_____

This is a list of 75 nonsense or pseudo words which will become part of a test instrument to be used in my Masters study. I want these nonsense words to be as much like normal or real words as possible, but they must not contain meaningful parts of real words which would confuse subjects' responses on the test.

Please identify, by means of an X in the appropriate column, any of the nonsense or synthetic words listed below which, in your judgment are:

1) not easily prounceable

2) in violation of the normal rules of English spelling

3) real words or contain real words

4) containing inflected endings (e.g. ing, ed, etc.)

5) containing suffixes or prefixes (e.g. ative, ite, pre, sub,etc)

Please make comments and mark the nonsense words as necessary to illustrate your judgments. Thank you.

NONSENSE WORDS	Not Pronounceable	Irregular Spelling	Contains Real Word	Contains Inflected Ending	Contains Prefix or Suffix	COMMENTS & SUGGESTIONS
SEDICHORT						
KEMELDEN						
SHAPLAST						
VENDIGHTEN						
PLEGALOTE						
SPODORN						
SIPOFFLE						
GRELLIMID						
BROCOTINE						
ARAPONE						
SUMAFID						
PORFIL						
WOSAND						
SEPRID						
CULLIM						
ULTEMISAT						
IRTOLE						
CETALOGN						
TRESOTT						
ANNALE						
DABRILL						
PENIMODEN						
PESORDLE						
TINNESTET						
GREMOVAN						
LEPORT						
TEMURDIL						

NONSENSE WORDS	Not Pronounceable	Irregular Spelling	Contains Real Word	Contains Inflected Endings	Contains Prefix or Suffix	COMMENTS & SUGGESTIONS
FRIPPON						
RINISEL						
KULLANE						
SEPTIGHI						
BUSHON						
FOLDESS						
CRETILL						
TEPOZANE						
SURNAT						
TROMBINE						
ZEEMOTLE						
APPOLIEN						
HUPIRT						
PESHELLITOR						
GROSLIED						
FURNIDET						
EPOUSTLE						
RASSIMANDER						
AULANE						
PRAWTUPPLE						
ULLIGANE						
SEPORIBEL						
PHEMAL						
ELTBURCK						
TONSAN						
BROCCORF						
TWELLIGEL						

NONSENSE WORDS	Not Pronounceable	Irregular Spelling	Contains Real Word	Contains Inflected Ending	Contains Prefix or Suffix	COMMENTS & SUGGESTIONS
SLEMAD						
PENNITACOR						
GLESSIMER						
EDDIPON						
CUMNIGASS						
NEBRON						
KELTEN						
DENBROSTIG						
MELLIPON						
NEMICRAN						
SEBLAT						
VIGOSET						
SHORILLEN						
CERRON						
IPPOL						
DRAMISTEL						
CELIFEROD						
DALIPULT						
GREBONG						
CAPEROND						
DANITASEN						

APPENDIX E

NONSENSE WORDS USED IN STUDY

APPENDIX E

LISTS OF DELETED, NONSENSE, AND CUED NONSENSE WORDS USED IN THE STUDY

Deletions:	Uncued Nonsense:	Cued Nonsense:
1. mainly	fripon	friply
2. located	rinisel	locisel
3. Scottish	Krallune	Krallish
4. nicknamed	stipvealt	nickvealt
5. slowly	bermod	bermly
6. destroyed	proldaist	destraist
7. designed	lattrone	latigned
8. government	ceporteald	goverteald
9. palace	surnat	surace
10. courtyard	brendfole	courtfole
11. headquarters	spreemonsile	spreemorters
12. official	appomarn	offimarn
13. middle	hupirt	hupdle
14. authority	pircelona	authelona
15. section	grosund	grotion
16. separate	feridalt	sepidalt
17. insisted	eprastol	eprasted
18. territory	drasimota	terrimota
19. urgent	swlune	swlent
20. centuries	pratupple	centupple
21. imagine	uligirt	uligine
22. indepedent	ombirunbuse	indepumbuse
23. sprawling	shrowpolt	shrowling
24. crisscrossed	eltburckel	crissburckel
25. discarded	kensepple	kensarded
26. streetlights	chramepoost	streetpoost
27. customers	twelligel	twelomers
28. policemen	sedichort	polichort
29. passageway	kemmelldorn	kemmellways
30. twisted	shaplas	twislas
31. controlling	vendrottern	vendrolling
32. history	sempulo	histulo
33. guardian	spowdeam	spowdian
34. expected	kepoffle	expuffle
35. substitute	grellimide	grellitute
36. enforcement	draporstine	enforatine
37. usually	raponel	raponly
38. dishonest	skumaffid	dismaffid
39. victims	porfil	porfims
40. ruling	wopand	ruland
41. described	shepraish	shepribed
42. explained	certounce	explounce
43. incapable	ultemisut	ultemable

List of: Deletions:	Uncued Nonsense:	Cued Nonsense:
44. escape	irtole	escole
45. magistrate	dofellarne	dofeltrate
46. witness	fresutt	witsutt
47. exchange	umbroose	umbrange
48. freedom	dabrell	freebil
49. inefficient	fennidofirn	fenidicient
50. beginning	speeordle	beggordle
51. included	umprosib	umpruded
52. constables	greanovard	constovard
53. reject	lepirt	lepect
54. respected	temourdil	respurdil
55. provide	sleneth	sleside
56. honorable	ennitagow	honitagov
57. enemies	gesimeg	osimies
58. innocent	eddipone	innopone
59. robberies	cunnigass	cunneries
60. reward	nebron	rebron
61. preferred	keltaight	keterred
62. surprising	deubrostig	surprostig
63. criminals	mellipown	mellinals
64. detectives	suderkallt	deteckallt
65. modern	seblat	sebern
66. directly	vigesett	diresete
67. permanent	shorillen	shorinent
68. arrest	ippold	ippest
69. varied	cerron	varron
70. cooperative	arriamalede	cooperalede
71. intolerant	celiferomb	celiferant
72. resistance	dalliporth	resisporth
73. process	grebeng	grecess
74. determined	casorfenne	deterfenne

APPENDIX F

CONTEXTUAL AND WORD IDENTIFICATION MEASURE
VERSION B

APPENDIX G
NOTE

This is not a school test. The passage I am going to ask you to read is part of a project I am doing to learn more about the ways in which adults figure out the meaning of unfamiliar words when they come across them in everyday reading.

The results of this study will be used to help teachers teach better. No ones' scores on this passage will be identified by name, or be used in any way other than as one score in a group of many.

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Please fill in the information below as completely as you can.

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Your sex:_____

The last grade you completed in regular school:_____

Was English the first language you learned to speak? Yes_____. No_____.

You attend ABE classes: once a week____. more than once a week____. less____.

If you would like information as to how you did on this passage, please check the box below and make a note of your test booklet number so you can identify your score on a numbered list of scores I will send to your instructor.

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DIRECTIONS

Beneath this page you will find an article about the police force made famous by Sherlock Holmes--Scotland Yard. Certain words in the article are numbered and underlined. These underlined words will not be familiar to you. Each time you see an underlined word, a space has been provided at the righthand side of the page. Please print in this space a word which you think means the same, or could be used in place of the underlined word.

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THE ORIGINS OF SCOTLAND YARD

Scotland Yard, the famous English police organization, has a curious history. It has not always enjoyed the popular acclaim that it does today. It came into being only after much resistance. Its powers are limited in a curious way. Even its name is misleading.

Since Scotland Yard is not a yard at all, and since it is not in Scotland either, the name seems to be a strange one. It refers (1)fripon to the building that houses the Metropolitan Police of London and, unofficially, to the police force itself. 1._____

The headquarters was named for the place where it was first (2)rinisel almost a hundred and fifty years ago. It was the site of a palace that was used by (3)Krallune kings and ambassadors when they visited London. The palace was (4)stipvealt "Scotland" by the people then. It was used a lot from the tenth century to the middle of the sixteenth century. (5)Bermod though, it fell into ruin. In 1697, a fire (6)proldaist the buildings. 2._____ 3._____ 4._____ 5._____ 6._____

After the fire, Sir Christopher Wren, who (7)lattrone many of England's finest churches and (8)ceporteald buildings, stored building materials in the empty lot that had been the (9)surnat courtyard; soon that courtyard came to be known as Scotland Yard. When the Metropolitan Police were begun in 1829, the door to their offices at No. 4 Whitehall was through that (10)brendfole. Before long, people were using the name Scotland Yard to mean both the building and the Metropolitan Police force itself. The name stuck. Even when the (11)spreemonsile was moved, much later, the new building was called Scotland Yard. 7._____ 8._____ 9._____ 10._____ 11._____

It is not quite correct to call the Scotland Yard force the London police. The word "metropolitan" is part of their (12)appcmarn title to show that they do not police the whole of London. There is an area about one mile square in the (13)hupirt of London which is called the City of London. In this part, the Metropolitan police have never had any (14)pircelona. From the beginning, people in this (15)grosund of London have rejected the services of Scotland Yard. They have their own (16)feridalt police force. If the men who began Scotland Yard had (17)eprastol on including the City of London in their (18)drasimota, they would never have been able to set up their modern police force at all. 12._____ 13._____ 14._____ 15._____ 16._____ 17._____ 18._____

To understand this, and to see London's (19)awlune need for an efficient police force, think what that great city was like in the eighteenth and early nineteenth (20)pratupple. 19._____ 20._____

(21)Ulicirt a large city broken into many smaller cities. Each little city would have a number of sections and would be trying to be (22)orbirumbuse from the other cities. This huge, (23)shrowpolt area is crowded with poor, sick and badly housed people. Imagine slums (24)eltburckel with cellar passageways and hidden corners and small streets, all very dirty, and where children and dogs fight over bones and (25)kenscpple scraps of food. 21._____ 22._____ 23._____ 24._____ 25._____

In this city, no (26)chrarepoost go on at night. The only light comes from lanterns hung over taverns where (27)twelligel fight and robbers look for their next victims. And in this city there is nothing like today's trained (28)sedichort. There is only the lonely Night Watch, making his rounds and calling out the time. Down the (29)kemmelldorn, maybe, is a parish constable who knows that shouting "Thief!" after a criminal will not bring any help. He also knows that chasing the man through dark and (30)shaplas streets will put his life in danger. 26._____ 27._____ 28._____ 29._____ 30._____

The constable can hardly be blamed for not (31)vendrottern crime or keeping it from happening. The (32)scmpulo of his job explains why. Back in the eleventh century, each member of a parish had to serve as a constable and (33)spowdeam of the peace. He was not paid for this. He was (34)kepoffle to do this work as well as his normal work. The wealthier citizens would often hire other men to do this work for them. These (35)grellimide constables--called deputies--would sometimes hire out their services year after year. In this way, some of them made (36)law-draporstine a full-time job. 31._____ 32._____ 33._____ 34._____ 35._____ 36._____

But since employers (37)raponel hired the men who would work for the least amount of pay, the deputies tended to be either dumb or (38)skumaffid. Neither kind of deputy did a very good job, but the dishonest one was sometimes more eager. He could often get money from the criminals, from the (39)porfil, and from the wealthy man who had hired him. 37._____ 38._____ 39._____

The Night Watch was even worse. These men were called "Charlies" because the job was started when King Charles was (40)wopand England. The writer, Henry Fielding, (41)shepraish them as "poor, old, decrepit people who are, from their want of bodily strength, incapable of making a living by work." Fielding also (42)certownce how they worked: "These men, armed only with a pole, which some of them are hardly able to lift, are to secure the persons and houses of His Majesty's subjects from the attacks of young, bold, stout, desperate and well- 40._____ 41._____ 42._____

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armed villains. If the poor, (43)ultemisut old fellows should run away from such enemies, no one, I think, can wonder why unless he should be surprised that they can even (44)irtole at all." 43._____ 44._____

There was one other kind of law officer in this huge city. He was probably the worst of all. He was called a magistrate. A (45)dofellarne in those days was an all-purpose law officer with all kinds of powers. He could hold court in his home, in a tavern, or wherever he pleased. He could arrest people, question them, charge them, and then appear before a jury as a (46)tresutt against them in a trial! He could choose constables, gives licenses to alehouses, let people out of prison in (47)umbroose for bail money (which he kept) and throw innocent persons into prison until they paid for their (48)dabrell. Magistrates were so bad and so (49)fennidofirn that the most important writers of the day made fun of them in books and plays. The writers wanted to get magistrates fired or, at least, make them less powerful. 45._____ 46._____ 47._____ 48._____ 49._____

One of these writers was Fielding, but he was poor. In 1748, he asked an important friend to find him a job. This friend, the Duke of Bedford, agreed. He gave Fielding a house and put him in charge of the "Commission of Peace" for the city of Westminster. Many people think it was this job which led to the (50)spesordle of the police force known all over the world as Scotland Yard. 50._____

Suddenly Fielding was in charge of the kind of police force he had always spoken against. Westminster (51)umprosib a huge part of London. There were many (52)greanovard, members of the Night Watch and magistrates who would now be working for him. Fielding's friends were both sad and glad for him. They were glad that he would now have a chance to live well, but sorry that he might have to (53)lepirt some of his beliefs and honest ways to earn his money. 51._____ 52._____ 53._____

But Fielding was a very honest man. He was to become famous and (54)tenourdil for his fight against corruption. After him, those who ran the police force would try hard to (55)slemeth good, honest law-enforcement. He was the first to make the job that he took an (56)ennitagow and respected one. 54._____ 55._____ 56._____

Even so, Fielding had (57)gesimeg among the magistrates of London, mostly among those in the City of London. Rich store owners there did not want a police force, as strange as it seems. They insisted on working with criminals in their own way. Often they would trade with the thieves and informers. Men called "thief-takers" would steal things and often hide them in the houses of (58)oddipone people. Later, they would 57._____ 58._____

inform on these innocent people and sell the stolen things back to the store owners. The same men were often hired by store owners, home owners and other people to protect them against robbers and break-ins. But the "thief-takers" often planned the (59)cunniness themselves. They would turn in the small-time criminals and collect the (60)nebron for themselves. 59._____ 60._____

Store owners and other people knew this was going on, but they still (61)keltaight this system to regular police. They didn't want to give up the power of picking their own policemen. They often used the magistrates to help get them out of trouble. The magistrates did not want to see the system end either as it made them rich. So it is not too (62)denbrostig that the magistrates and those who hired them joined together to keep from having regular police. 61._____ 62._____

Fielding could not get police work away from the magistrates. But he did bring some order to the fight against (63)mellipown. He found men he could trust and trained them well. These men were the first real (64)suderkallt. They did a very good job even though they were not official policemen. 63._____ 64._____

When Fielding died in 1754, his half-brother, Sir John Fielding, took over his work. Many of the ways in which (65)seblat English policemen work come (66)vigesett from the teachings of Sir John Fielding. Many of the ideas of the two brothers,Henry and John, were used to train men when Sir Robert Peel took over the job in 1829. 65._____ 66._____

Sir Robert knew that London could not be well policed until all constables had (67)shorillen jobs and took their orders from one man. In London back then, there were many laws. These laws (68)cerron from one side of the street to the other. Sometimes they were different from one day to the next. No one could learn all of them quickly. The police had to be trained how to (69)ippold people and when. They had to know how to control riots. They had to know how to get along with people. The English citizens were not very (70)arrismalede at first. 67._____ 68._____ 69._____ 70._____

To set up just one police force, Sir Robert Peel had to agree not to include the City of London in his plan. The city was so (71)celiferomb of policemen that it even welcomed escaping criminals and closed its gates to the police. The old idea of self-rule cost the city a lot because the city was overrun by criminals of all kinds for a long time. 71._____

Sir Robert put two men in charge of the force. These men, Sir Charles Rowan and Sir Richard Mayne, worked together at Scotland Yard. Peel wanted to teach people that "liberty does not consist of having your house robbed by gangs of thieves." It was a hard lesson to teach. Rowan and Mayne worked hard to overcome this (72)dalliporth. When they 72._____

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The English policeman was taught to be polite and helpful to all people, both rich and poor. He was taught to work in a quiet and (74)casorfenne way. The English call a policeman "bobby" to this day because of the respect felt for Sir Robert Peel. 74._____

And so, from its difficult start, Scotland Yard gradually became a symbol of the security of the great city of London and of its people. Today, Scotland Yard is not only a place, but a group of men who are respected, loved and depended upon. This is why even today, when policemen are disliked in many parts of the world, Englishmen feel their bobbies are a welcome sight.

APPENDIX G

Contextual and Word Identification Measure
Version A

APPENDIX F

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